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| 10/054,021 | 11/13/2001 | Robert A. Weiss | UCT-0019 | 1427 |
| 23413 | 7590 | 06/07/2004 | EXAMINER | |
| CANTOR COLBURN, LLP 55 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002 | | | JOLLEY, KIRSTEN | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1762 | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/054,021

Applicant(s)

WEISS ET AL.

Examiner

Kirsten C Jolley

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 April 2004.
2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 6-21 is/are pending in the application.
4a) Of the above claim(s) 14-21 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-3 and 6-13 is/are rejected.
7) ☒ Claim(s) 4 is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group I in the paper mailed January 2, 2004 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Response to Arguments

2. The claim objections and 35 USC 112, 2nd paragraph rejections set forth in the prior Office action have been withdrawn in response to Applicant's amendments to claim 8.

3. Applicant's arguments filed April 5, 2004 have been fully considered but they are not persuasive.

With respect to the rejection under 112, 1st paragraph, Applicant argues that the level of ordinary skill in the art of polymer chemistry is high, and while not entirely predictable in all situations, it is well known that halogens often have similar characteristics. Applicant states that a working example in the application can be readily adapted to use of other vaporous halogens, and an experiment, if needed, is not complex. While the Examiner agrees with Applicants that one halogen can typically be substituted for another without undue experimentation, the catalyst art is notoriously known as an unpredictable art. MPEP 2164.03 states:

- The amount of guidance or direction needed to enable the invention is inversely related to the amount of knowledge in the state of the art as well as the predictability in the art. In re

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Fisher, 427 F.2d 833, 839, 166 USPQ 18, 24 (CCPA 1970). The “amount of guidance or direction” refers to that information in the application, as originally filed, that teaches exactly how to make or use the invention. The more that is known in the prior art about the nature of the invention, how to make, and how to use the invention, and the more predictable the art is, the less information needs to be explicitly stated in the specification.

- In contrast, if little is known in the prior art about the nature of the invention and the art is unpredictable, the specification would need more detail as to how to make and use the invention in order to be enabling. MPEP 2164.03.
- In applications directed to inventions in arts where the results are unpredictable, the disclosure of a single species usually does not provide an adequate basis to support generic claims. In re Soll, 97 F.2d 623, 624, 38 USPQ 189, 191 (CCPA 1938).
- In cases involving unpredictable factors, such as most chemical reactions and physiological activity, more may be required. In re Fisher, 427 F.2d 833, 839, 166 USPQ 18, 24 (CCPA 1970) (contrasting mechanical and electrical elements with chemical reactions and physiological activity). See also In re Wright, 999 F.2d 1557, 1562, 27 USPQ2d 1510, 1513 (Fed. Cir. 1993); In re Vaeck, 947 F.2d 488, 496, 20 USPQ2d 1438, 1445 (Fed. Cir. 1991). This is because it is not obvious from the disclosure of one species, what other species will work.

Therefore, because this invention lies in the area of catalytic chemistry, which is an unpredictable art, it is the Examiner’s position that there is a higher standard of evidence needed for enablement. It remains the Examiner’s position that the specification does not enable one

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having ordinary skill in the art to manufacture a conductive polymer composite using a vaporous halogen other than vaporous iodine.

With respect to the 35 USC 102(b) rejections, Applicant argues that Weiss et al. does not disclose the combination of an oxidative catalyst in a vapor phase with a solventless process because Weiss uses supercritical carbon dioxide to dissolve the iron-based catalyst. While the Examiner acknowledges that the supercritical carbon dioxide dissolves the iron-based catalyst in the process of Weiss et al., thus acting like a solvent, the term “solventless” appears to be defined on page 2, lines 3-4 of Applicant’s specification as including supercritical carbon dioxide processes. Applicant’s specification states: “A *solventless* process for preparing conductive polyurethane foams in which supercritical carbon dioxide (scCO₂) was used to dissolve an oxidant and swell the polyurethane foam... [emphasis added].” For this reason, the rejection over Weiss et al. is maintained as being considered a solventless process, according to the definition in Applicant’s specification. Also, because supercritical fluids are known to have properties of both vapor and gas, and the iron-based oxidative catalyst of Weiss et al. is dissolved in supercritical CO₂, the process of Weiss et al. meets the limitation of “an oxidative catalyst in a vapor phase.”

Specification

4. The amendment filed April 5, 2004 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: the disclosure at page 5, line 13, stating that a

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“vaporous halogen” may be used as an oxidative catalyst in the invention. It is the Examiner’s position that the specification does not enable one having ordinary skill in the art to manufacture a conductive polymer composite using a vaporous halogen other than iodine for the reasons discussed above in section 3.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 8-10 and 12-13 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for iodine vapor, does not reasonably provide enablement for all vaporous halogens. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims. Claim 8 requires “impregnating a polymer with a vaporous halogen.”

Applicant’s specification is directed to the use of vaporous iodine for impregnating a polymer, and does not mention that other vaporous halogens may be used or provide details as how to use the invention using a halogen other iodine. Therefore, it is the Examiner’s position that the specification does not enable one having ordinary skill in the art to manufacture a conductive polymer composite using a vaporous halogen other than iodine. The Federal Circuit has repeatedly held that “the specification must teach those skilled in the art how to make and use the

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full scope of the claimed invention without 'undue experimentation'." *In re Wright*, 999 F.2d 1557, 1561, 27 USPQ2d 1510, 1513 (Fed. Cir. 1993).

7. Claims 8-13 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In claim 8, line 4, the newly added limitation "and in the absence of supercritical carbon dioxide" appears to be new matter. While Applicant's specification discloses an embodiment where supercritical carbon dioxide is used, the specification does not provide support for the limitation of specifically *excluding* supercritical carbon dioxide.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-3 and 6-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Y. Fu, D. Palo, C. Erkey, and R. Weiss "Synthesis of Conductive Polypyrrole/Polyurethane Foams via a Supercritical Fluid Process", hereinafter referred to as Weiss et al.

Weiss et al. discloses a method for the manufacture of a conductive polymer composite comprising the steps of: impregnating a polymer foam with a catalyst for the polymerization of

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polypyrrole using supercritical carbon dioxide as the solvent; and exposing the impregnated polymer to a pyrrole vapor to form a conductive polymer composite. On page 7611, first full paragraph in the second column, Weiss et al. teaches impregnating polyurethane foam specimens with $\text{Fe}(\text{CF}_3\text{SO}_3)_3$ dissolved in supercritical carbon dioxide, exposing the impregnated polyurethane foams to pyrrole vapor. As discussed on page 2 of the specification, supercritical carbon dioxide is not considered a volatile organic solvent. Because Weiss et al. does not teach the use of a solvent other than supercritical carbon dioxide, it is the Examiner's position that the impregnation meets the limitation of impregnating occurring in the absence of a volatile organic solvent. As to claim 3, Weiss et al. teaches a conductivity of 0.03 S/cm at the top of the second column on page 7612.

With respect to the newly added limitations that the impregnation is solventless and the oxidative catalyst is in the vapor phase, the Examiner acknowledges that the supercritical carbon dioxide dissolves the iron-based catalyst in the process of Weiss et al., thus acting like a solvent. However, the term "solventless" appears to be defined on page 2, lines 3-4 of Applicant's specification as including supercritical carbon dioxide processes. Applicant's specification states: "A *solventless* process for preparing conductive polyurethane foams in which supercritical carbon dioxide (scCO_2) was used to dissolve an oxidant and swell the polyurethane foam... [emphasis added]." For this reason, the rejection over Weiss et al. is maintained as a solventless process, according to the definition in Applicant's specification. Also, because supercritical fluids are known to have properties of both vapor and gas, and the iron-based oxidative catalyst of Weiss et al. is dissolved in supercritical CO_2 , the process of Weiss et al. meets the limitation of "an oxidative catalyst in a vapor phase."

Allowable Subject Matter

10. Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 4 is allowable over the prior art for the reasons discussed in section 17 of the prior Office action.

11. Claim 11 would be allowable if rewritten to overcome the new matter rejection(s) under 35 U.S.C. 112, first paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims. Claim 4 is allowable over the prior art for the reasons discussed in section 17 of the prior Office action.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,


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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kirsten C Jolley whose telephone number is 571-272-1421. The examiner can normally be reached on Monday to Thursday and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive P Beck can be reached on 571-272-1415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Kirsten C Jolley
Patent Examiner
Art Unit 1762

kcj